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10/724,205	12/01/2003	Nobuhiro Takano	03280090US	9849

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EXAMINER	
BERHANU, SAMUEL	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/724,205	TAKANO ET AL.	
	Examiner	Art Unit	
	Samuel Berhanu	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida et. al. (US 7,012,405) in view of Hiyoshi et. al. (US 5,675,816).

Regarding Claims 1 and 14, Nishida et. al. disclose in Figures 1-5, a universal battery charger for charging batteries with different number of cells connected in series, comprising; a power supply (4) circuit that produces a predetermined number of voltages (E1, E2, E3) different in level for applying selected one of the predetermined number of voltages to a battery (11), the predetermined number of voltages including a highest voltage and a lowest voltage (Column 8, lines 20-21, E2≥ E1>E3); a battery voltage detecting circuit (3) that detects a voltage across the battery before charging the battery (Column 8, lines 35-40); a switch (24, 36) that is connected between the power supply circuit and the battery and is turned ON to allow charging of the battery and OFF to interrupt the power supply circuit from the battery; and a control device (6) that selects one of the predetermined number of voltages(E1, E2, E3) depending upon the detected voltage across the battery before the charging of the battery (noted that the battery voltage is detected before charging voltage applied to the battery by the controller) . However, Nishida et. al. do not disclosed explicitly, controls the switch to

turn ON so that a rush current does not flow in the battery at the start of charging. Hiyoshi et. al. disclose in Figure 10, element 292, a stabilization circuit that resists rash current at the time of the start of the charging current, controls the switch to turn ON so that a rush current does not flow in the battery at the start of charging (Column 19, lines 41-54). It would have been obvious at the time of the invention to the person ordinary skill in the art to add a stabilization circuit as taught by Hiyoshi et. al. in Nishida et. al. charging circuit in order to protect the drastic reduction of battery life due to in-rush current.

Regarding Claim 2, Nishida et. al. disclose in Figures 1-5, wherein the control device (6) controls the power supply circuit (4) to produce a voltage equal to or close to the voltage detected by the battery voltage detecting circuit and further controls the switch to turn on.

Regarding claim 8, Nishida et. al . disclose in Figures 1-5, wherein when a difference between the voltage detected by the battery voltage detecting circuit and the voltage produced by the power supply circuit falls within a predetermined range, the control device controls the switch to turn on (the control device outputs one of the plurality of voltage based on the battery voltage and the charging voltage comparison).

Regarding Claim 9, Nishida et. al. disclose Figures 1-5, wherein the voltage close to the voltage detected by the battery voltage detecting circuit is a voltage above and closest to the voltage detected by the battery voltage detecting circuit among the Predetermined number of voltages.

Regarding Claim 10, Nishida et. al disclose in Figures 1-5, the control device (6) further controls the power supply circuit to produce the highest voltage after the switch is turned on. (Noted that based on the voltage of the battery, one of the charging voltage from the plurality of voltages is supplied to the battery by the controller, the switch must be on in order to supply charging voltage to the battery)

Regarding Claim 11, Nishida et. al. disclose in Figures 1-5, the switch (36) is directly connected to the battery.

Regarding Claim 12, Nishida et. al. disclose, the switch (24) is directly connected to the power supply circuit (4).

Regarding Claim 13, Nishida et. al. disclose in Figures 1-5, where each of the predetermined number of voltages is applied to the battery by substantially the same components of the power supply circuit.

3. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida et. al. (US 7,012,405) in view of Hiyoshi et. al. (US 5,675,816) as applied to claim 1 above, and further in view of Nagai et. al (US 6,124,700).

Regarding Claim 3, neither Nishida et. al. nor Hiyoshi et. al. disclose the control device controls the switch to turn on after expiration of a predetermined period of time from a time when the voltage equal to or close to the voltage detected by the battery voltage detecting circuit is produced by the power supply circuit. However, Nagai et al. disclose in Figures 7, 8 and 10, wherein the control device controls the switch to turn on after expiration of a predetermined period of time from a time when the voltage equal to or close to the voltage detected by the battery voltage detecting circuit is produced by

the power supply circuit (Column 27, lines 55-69, Column 28, lines 1-44). It would have been obvious at the time of the invention to the person ordinary skill in the art to modify Nishida et. al. charging system and add a timer circuit as taught by Nagai et. al. in order to prevent deterioration of characteristic of the secondary battery caused by unnecessary charging.

Regarding Claim 4, Nishida et. al. disclose in Figures 1-5, wherein the control device controls the switch to turn on after expiration of a predetermined period of time from a time when the voltage equal to or close to the voltage detected by the battery voltage detecting circuit is produced by the power supply circuit (Noted that the charging voltage is closer to the detected battery voltage)

Regarding Claim 5, Nishida et. al. Figures 1-5, wherein the control device further controls the power supply circuit to produce the highest voltage after the switch is turned on (noted that the charge controller is outputting the highest voltage value based on the battery detection signal while the switch is ON).

4. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida et. al. (US 7,012,405) in view of Hiyoshi et. al. (US 5,675,816) as applied to claim 1 above, and further in view of Terada et. al. (6,483,272).

Regarding Claim 6, Nishida et. al. disclose in Figures 1-5, the battery voltage detecting circuit (3) detects a voltage a cross the battery and the control device (6) controls the power supply (4) circuit to produce the voltage equal to or close to the voltage detected by the battery voltage detecting circuit, and thereafter controls the switch to turn on. Neither Nishida et. al. nor Hiyoshi et. al. disclose a battery connection

detecting device that detects the battery is connected for being charged, wherein when the battery connection detecting device detects that the battery is connected. However, Terada et. al. disclose in Figure 2, battery connection detecting device (129) that detects the battery is connected for being charged, wherein when the battery connection detecting device detects that the battery is connected (Column 5, lines 54-67, Column 7, lines 50-67). It would have been obvious at the time of the invention to the person in the ordinary skill in the art to add the battery connection means as taught by Terada et. al. in Nishida et. al. charging system in order to control the charging process of the secondary battery

Regarding claim 7, Terada et. al. disclose in Figure 2, wherein when the battery connection detecting device detects that the battery is not connected .Nishida et. al. disclose in Figures 1-5, the control device n (6) controls the power supply circuit to produce the lowest voltage (noted that the charging voltage becomes zero when the switch is in off position and no electrical connection is established between the battery and the voltage sources). (Please see paragraph 6 above, rejection of claim 6)

5. Claim 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida et. al (US 7,012,405) in view of Cheiky et. al. (US 6,522,102).

Regarding Claim 15, Nishida et. al. disclose in Figures 1-4, a method of charging a battery using a universal battery charger comprising: a power supply circuit that produces a predetermined number of voltages having a first level (E2), a second level (E1) which is lower than the first level and a third level (E3) which is lower than the

second level (Column 8, lines 20-24), and a selected one of the predetermined number of voltages being applied to the battery (Column 7, lines 440-50); a battery voltage detecting circuit (3) that detects a voltage across the battery before charging the battery; and a control device (6) that selects one of the predetermined of voltages to be applied to the battery (column 9, lines 5-16); second step of selecting a voltage from the first , second (E1)and third levels to be applied to the battery when the battery is connected, depending upon the voltage across the battery detected by the battery voltage detecting circuit(selecting a charging voltage of E1 by the controller can be considered as a second step); and third step of selecting a voltage having the first level (E2) to be applied to the battery after the second step (noted that E3 is selected after E2) (Column 9, lines 18-67). Nishida et. al. do not disclose explicitly, first step of selecting a voltage from the third level before the battery is connected. However, Cheiky et. al. disclose a multiple plateau battery charging, first step of selecting a voltage from the third level (a third level is lower voltage) before the battery is connected (noted that the battery is not electrically connected prior to charging; and also Cheiky et. al. is teaching to charge the battery with a lower charging voltage at the first charging stage, Column 10, lines 5-26, figures 1-3). It would have been obvious at the time of the invention to the person ordinary skill in the art to modify Nishida. et. al. and start charging the battery with the lowest charging voltage at the start of the charging as taught by Cheiky et. al. in order prevent driving too much energy into the battery too fast, and, thus, prevent damage to the battery.

Regarding Claim 16, Nishida et. al. disclose that the third step is performed when a predetermined period of time has elapsed after the second step.

Regarding Claim 17, Nishida et. al. disclose wherein the third step is performed when the voltage produced by the power supply circuit has dropped to a level close to the detected battery voltage.

Response to Arguments

6. Applicant's arguments with respect to claim 05/01/2006 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Berhanu whose telephone number is 571-272-8430. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SB

KARL EASTHOM
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